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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/402,322	02/02/2000	WOLFGANG DULTZ	2345/91	5796

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EXAMINER

STULBERGER, CAS P

ART UNIT	PAPER NUMBER
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2132

DATE MAILED: 06/27/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/402,322

Applicant(s)

DULTZ ET AL.

Examiner

Cas Stulberger

Art Unit

2132

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election required.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## ETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

3. Claims 11-13, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,999,285 to Brandt et al.

Brandt discloses a quantum key distribution method that employs non-orthogonal quantum states to distribute a random bit sequence between two users for use as a provably secure key for encryption and authentication. Brandt also discloses two beam splitters and three photodectors (Brandt: Abstract, Figure 1). This meets the limitations of “emitting photons, splitting the photons, and detecting the photons by a first, second, and third beam splitters, the

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second detector disposed in a second downstream path of the first beam splitter and a third detector being disposed in a fourth downstream path of the second beam splitter.” For the purpose of secure key generation in quantum cryptography, one can employ a train of single photons having two possible equally likely nonorthogonal polarization states, which encode 0 and 1, respectively, to securely communicate a random bit sequence between a sender and a receiver (Brandt: column 2, lines 4-10).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to U.S. Patent No. 5,999,285 to Brandt et al claims 11-13, and 15 above, and further in view of U.S. Patent No. 5,307,410 to Bennett.

Brandt however does not disclose a third beam splitter. Bennett discloses a random number generator for generating random numbers, a phase modulation coupled to the first source of coherent light pulses and one or more beam splitter. This meets the limitation of “a third beam splitter.”

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method of using two beam splitters and three detectors as disclosed by Brandt with the method of having a third beam splitter as disclosed by Bennett in

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order to achieve provable security that their messages are unintelligible to an eavesdropper (Bennett: column 1, lines 24-25).

6. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to U.S. Patent No. 5,999,285 to Brandt et al claims 11-13, and 15 above, and further in view of U.S. Patent No. 5,966,224 to Hughes et al.

Brandt however does not disclose using an attenuated laser as the light source or a trigger detector. Hughes discloses using a trigger detector (Hughes: column 6, line 32). Hughes also discloses using a laser that outputs single pulses that are split into preceding bright pulses and delayed attenuated pulses and polarized (Hughes: Abstract, second sentence). This meets the limitation of “wherein the photon source includes an attenuated laser; the first detector includes a trigger detector.”

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method of key distribution as disclosed by Brandt with the method of using an attenuated laser and trigger detectors as disclosed by Hughes in order to avoid attenuation and beam wander because of atmosphere turbulence (Hughes: column 6, lines 28-29).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to U.S. Patent No. 5,999,285 to Brandt et al claims 11-13, and 15 above, and further in view of U.S. Patent No. 3,575,669 to Haeff et al.

Brandt however does not disclose using a thermal light source. Haeff discloses a thermal light source spontaneously emits lights as photons (Haeff: column 1, lines 4-5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made the method of key distribution as disclosed by Brandt with the method of using a thermal light source as disclosed by Haeff in order to release energy as photons substantially without influence by and independently of photons emitted by any other atom or molecule (Haeff: column 1, lines 8-10).

8. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to U.S. Patent No. 5,999,285 to Brandt et al claims 11-13, and 15 above, and further in view of U.S. Patent No. 5,323,010 to Gratton et al.

Brandt however does not disclose a spectral lamp. Gratton discloses that the light source may be an arc lamp, a spectral lamp, an LED, a continuous wave laser, a diode laser, or the like with the light beam being pulsed in a variety of possible ways. (Gratton: column 11, lines 24-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made the method of key distribution as disclosed by Brandt with the method of using a spectral lamp, and LED as disclosed by Gratton in order to accurately determine phase and modulation at high frequencies (Gratton: column 3, lines 6-7).

### *Conclusion*

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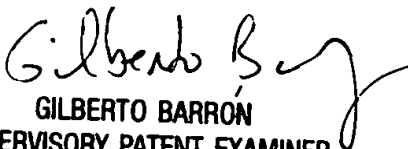
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cas Stulberger whose telephone number is (703) 305-8034. The examiner can normally be reached on Monday - Thursday, 7:30A.M. - 5:00P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

CS

CS  
June 19, 2003

  
GILBERTO BARRON  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100